

Table 1. The frequency per 1,000 population for diagnostic nuclear medicine procedures reported in this survey

<i>Country</i>	<i>Gamma cameras & SPECT</i>	<i>PET</i>	<i>All diagnostic NM</i>
Argentina	13.28	2.08	15.36
Australia	22.80	3.38	26.18
Bangladesh	0.10	0.01	0.11
Belgium	40.83	4.01	44.84
Brazil	4.76	0.11	4.87
Bulgaria	2.46	1.27	3.73
Belarus	12.00	0.00	12.00
Canada	36.89	2.47	39.36
China	1.46	0.36	1.83
Croatia	8.06	1.81	9.87
Cyprus	5.65	0.00	5.65
Czech Republic	19.95	2.35	22.30
Denmark	21.93	8.25	30.18
Estonia	3.24	0.97	4.21
Finland	5.87	1.64	7.51
France	13.27	3.57	16.84
Germany	30.05	1.72	31.77
Greece	11.58	0.53	12.11
Hungary	44.82	4.07	48.89
Iceland	4.33	0.00	4.33
Iran	7.52	0.04	7.56
Iraq	0.05	0.00	0.05
Italy			40.05
Japan	9.05	4.53	13.58
Lebanon	2.54	2.08	4.63
Lithuania	6.55	0.58	7.13
Luxembourg	19.94	4.17	24.11
Madagascar	0.01	0.00	0.01
Montenegro	2.97	0.00	2.97
Netherlands	20.62	4.59	25.21
Niger	0.04	0.00	0.04
Norway	6.12	2.29	8.41
Pakistan	0.85	0.04	0.89
Philippines	0.19	0.02	0.21
Poland	4.17	1.21	5.38
Romania	1.40	0.46	1.86
Russian Federation	3.14	0.21	3.35
Saudi Arabia	3.15	0.00	3.15

<i>Country</i>	<i>Gamma cameras & SPECT</i>	<i>PET</i>	<i>All diagnostic NM</i>
Spain	12.07	1.37	13.44
Sudan	0.18		0.18
Sweden	8.16	2.11	10.27
Switzerland	11.74	5.00	16.74
Thailand	0.83	0.05	0.88
United Arab Emirates	1.21	0.33	1.54
Ukraine	6.73	0.09	6.82
North Macedonia	0.50	1.04	1.54
United Kingdom of Great Britain and Northern Ireland	7.55	2.39	9.94
United States of America	36.32	5.80	42.12

Lebanon: Have the number of procedures been scaled up to cover the whole country?

Chile: Submitted data has not been included as it was from one institution only. Do you have data which represents the whole country?

Brunei: Submitted data has not been included as only 6 procedures were reported for the whole year. Do you have annual numbers for the SPECT and PET systems?

Indonesia: Submitted data has not been included as only 34 procedures were reported for the whole year. Do you have annual numbers for the SPECT and PET systems?

Bangladesh: The sum of the procedure numbers using gamma cameras, SPECT and PET does not match with the “All diagnostic procedures” number reported. Please clarify this discrepancy.

Ukraine: The number of NM procedures using a gamma camera or SPECT on the Essential data page did not match the figure on the Frequency page. The data on the Essential page has been used. Is this correct?

Philippines: The number of procedures on the Essential worksheet does not match the corresponding values on the Frequency page for both gamma camera & SPECT, and also for PET. The data on the Essential page has been used. Is this correct?

Table 2. The frequency per 1,000 population for single photon nuclear medicine procedures (using either a gamma camera or SPECT system) for each of the major study types reported in this survey

<i>Country</i>	<i>Total</i>	<i>Cardio-vascular</i>	<i>Endo-crine</i>	<i>GIT</i>	<i>Renal</i>	<i>Infec-tion</i>	<i>Nervous system</i>	<i>Oncology</i>	<i>Pulmo-nary</i>	<i>Skeletal</i>	<i>Lymph-atics</i>
Argentina	13.28	4.904	0.294	0.539	0.245	0.049	0.147	0.000	0.049	5.884	1.164
Australia	22.80	5.266	2.078	0.913	0.711	0.252	0.329	0.173	2.294	10.001	0.761
Brazil	4.76	3.328	0.231	0.032	0.404		0.001	0.043	0.067	0.557	0.069
Bulgaria	2.46	0.058	0.348	0.008	0.106	0.002	0.028	0.048	0.159	1.711	
Belarus	12.00				8.270				0.070	1.794	
China	1.46	0.068	0.252		0.176					0.784	
Croatia	8.06	1.162	1.701		0.799	0.073	0.092		0.272	2.768	
Cyprus	5.65	2.069	1.071		0.863		0.000		0.205	1.444	
Czech Republic	19.95	2.404	1.001	0.139	0.965	1.082	0.178	2.258	3.907	5.725	0.252
Denmark	21.93	4.020	3.016	0.096	3.590	0.073	0.290	0.017	2.099	2.837	0.451
Estonia	3.24	0.393	0.571	0.010	0.164	0.011	0.092	0.559	0.109	0.457	0.092
Finland	5.87	1.012	0.036	0.027	0.292		0.239	1.018	0.392	1.906	
France	13.27	4.192	0.985	0.031	0.231		0.458		0.789	5.280	
Germany	30.05	6.614	13.572	0.037	0.727	0.062	0.209	0.745	0.850	7.094	
Greece	11.58	6.967	0.842		0.741	0.049	0.057	0.021	0.268	3.403	
Iceland	4.33	0.274	0.446	0.140	0.387	0.029	0.381	0.661	0.393	3.154	
Japan	9.05	2.068		0.033			1.608	0.277	0.197	3.339	
Lebanon	2.54	0.020								0.015	
Lithuania	6.55	0.854	1.042	0.012	0.530	0.419	0.258	0.006	0.120	2.665	
Luxembourg	19.94	2.732	5.839	0.144	0.567	0.330	0.528	0.119	0.945	7.884	0.574
Montenegro	2.97		0.598	0.008	0.288				0.033	1.427	0.053
Niger	0.04	0.014	0.004	0.001	0.002	0.000	0.000	0.009	0.000	0.006	
Norway	6.12	1.487	0.841	0.072	0.820	0.027	0.471	0.808	0.184	1.197	0.059

<i>Country</i>	<i>Total</i>	<i>Cardio-vascular</i>	<i>Endo-crine</i>	<i>GIT</i>	<i>Renal</i>	<i>Infection</i>	<i>Nervous system</i>	<i>Oncology</i>	<i>Pulmonary</i>	<i>Skeletal</i>	<i>Lymphatics</i>
Philippines	0.19	0.005	0.043	0.001	0.024					0.113	
Poland	4.17	0.595	1.161	0.036	0.578		0.019	0.396	0.098	1.511	0.187
Romania	1.40	0.095	0.238	0.029	0.093		0.002		0.031	0.854	0.059
Russian Federation	3.14	0.229	0.424	0.123	0.855		0.020	0.017	0.082	1.470	
Spain	12.07	2.566	1.250		0.782	0.450	0.698	0.287	0.420	5.616	
Sudan	0.18	0.001	0.087	0.001	0.025					0.062	0.001
Sweden	8.16	2.812	0.546	0.135	0.784	0.027	0.181	0.848	1.097	1.681	
Switzerland	11.74	1.669	0.334	0.006	0.350	0.796	0.086	0.024	0.594	2.494	
Thailand	0.83	0.141	0.096	0.021	0.042	0.002	0.002	0.009	0.012	0.428	0.010
United Arab Emirates	1.21	0.332	0.266	0.043	0.235	0.010	0.003	0.027	0.034	0.263	0.007
Ukraine	6.73	0.003			0.666		0.006		0.004	1.172	
United Kingdom of Great Britain and Northern Ireland	7.55	2.035	0.370	0.423	0.689	0.040	0.195	0.543	0.592	2.587	0.422
United States of America	36.32	19.938	1.827	2.879	1.115	0.867	0.619	1.238	2.136	5.170	

China: On the Dose NM page of the NM survey 229,000 procedures were reported as “Others” for gamma camera & SPECT procedures, with an administered activity of 370 MBq. Please indicate which procedures have been included in “Others” and which radiopharmaceuticals were used for each of them.

Table 3. The frequency per 1,000 population for PET procedures for each of the major study types reported in this survey

<i>Country</i>	<i>Total</i>	<i>Cardio vascular</i>	<i>Infection</i>	<i>Nervous System</i>	<i>Oncology</i>	<i>Skeletal</i>
Argentina	2.08				2.079	
Australia	3.38			0.046	2.684	
Belgium	4.01				4.015	
Brazil	0.11	0.019			0.076	0.017
Bulgaria	1.27	0.001		0.003	1.266	
Croatia	1.81	0.207			1.601	
Czech Republic	2.35	0.024		2.182	0.112	0.035
Denmark	8.25	0.795	0.452	0.092	6.609	0.012
Estonia	0.97			0.014	0.866	0.067
Finland	1.64	0.094		0.145	1.120	0.037
France	3.57				3.572	
Germany	1.72	0.049		0.160	1.515	
Greece	0.53				0.526	
Japan	4.53	0.029		0.140	4.354	
Lithuania	0.58	0.005		0.014	0.566	
Luxembourg	4.17				4.171	
Norway	2.29	0.008		0.173	2.112	
Philippines	0.02				0.015	
Poland	1.21	0.002	0.001	0.0002	1.205	0.004
Romania	0.46				0.462	
Russian Federation	0.21			0.010	0.185	
Spain	1.37				1.366	
Sweden	2.11	0.025	0.001	0.403	1.585	0.221
Switzerland	5.00				5.000	
Thailand	0.05			0.005	0.041	
United Arab Emirates	0.33	0.004			0.317	
Ukraine	0.09		0.008		0.078	
United Kingdom of Great Britain and Northern Ireland	2.39	0.038		0.042	2.314	
United States of America	5.80	0.232		0.174	5.393	

Czech Republic: The Frequency NM page gives: Total PET procedures = 24889, PET Oncology F-18 = 1181 procedures, PET Nervous system = 23087 procedures. However the Dose NM page gives: PET Oncology F-18 = 28311 procedures and nothing for PET Nervous system. Please clarify this discrepancy.

China: On the Dose NM page of the NM survey 10,300 procedures were reported as "Others" for PET procedures, with an administered activity of 370 MBq. Please indicate which procedures have been included in "Others" and which radiopharmaceuticals were used for each of them.

Table 4. The frequency per 100,000 population for radionuclide therapy procedures reported in this survey

<i>Country</i>	<i>All Therapy</i>	<i>Thyroid Benign</i>	<i>Thyroid Cancer</i>	<i>Bone metastases</i>	<i>PRRT</i>	<i>Poly-cythaemia</i>	<i>Radio-synovectomy</i>	<i>SIRT</i>	<i>MIBG</i>
<i>Radionuclide</i>		<i>I-131</i>	<i>I-131</i>	<i>Sr-89, Sm-153 R-223</i>	<i>Y-90, Lu-177</i>	<i>P-32</i>	<i>Y-90, Sm-153, Er-169, Re-186</i>	<i>Y-90</i>	<i>I-131</i>
Argentina	39.76	0.72	24.58	2.17				2.17	0.72
Australia	17.23	13.47	2.51	0.21		0.01	0.23	0.81	
Bangladesh	25.00								
Belgium	49.51	40.32	3.30	3.12		0.18		2.59	
Brazil	8.58	6.14	1.72	0.06	0.10	0.00	0.51	0.03	0.02
Bulgaria	3.20	1.52	0.81	0.18					
Belarus	17.79								
Canada	32.18								
China	43.35	15.33	3.09						
Cyprus	26.78	6.83	19.96						
Czech Republic	22.20	3.89	10.45	1.38			3.27	0.01	0.52
Denmark	38.16	30.67	0.81		4.07				0.88
Estonia	65.50	29.71	32.30	0.23	2.51		0.15		
Finland	34.24	17.17	10.37	0.18	2.00	4.16		0.16	
Germany	135.47	25.62	17.12		2.71		87.07	1.97	
Greece	27.53	2.83	21.90	1.62	0.29		0.84		0.03
Hungary	15.28								
Iceland	32.32	7.57	6.12	18.64					
Iran	3.86								
Iraq	4.65								
Japan	8.26	3.85	2.88						
Lebanon	17.08	1.67	0.83						

<i>Country</i>	<i>All Therapy</i>	<i>Thyroid Benign</i>	<i>Thyroid Cancer</i>	<i>Bone metastases</i>	<i>PRRT</i>	<i>Poly-cythaemia</i>	<i>Radio-synovectomy</i>	<i>SIRT</i>	<i>MIBG</i>
<i>Radionuclide</i>		<i>I-131</i>	<i>I-131</i>	<i>Sr-89, Sm-153 R-223</i>	<i>Y-90, Lu-177</i>	<i>P-32</i>	<i>Y-90, Sm-153, Er-169, Re-186</i>	<i>Y-90</i>	<i>I-131</i>
Lithuania	16.24	11.91		2.08					
Luxembourg	32.65	31.60					1.05		
Netherlands	14.51	5.40	5.45	1.68	1.85	0.13			
Norway	26.58	12.52	3.53	10.23	0.04	0.00		0.17	0.09
Pakistan	2.23								
Philippines	0.30	0.12	0.18						
Poland	54.36	33.90	7.17	1.89	0.23		7.62		0.09
Romania	12.04	2.17	9.87						
Russian Federation	20.51	4.79	13.67	2.05					0.07
Spain	37.22	18.16	13.62	0.83	1.62			2.99	
Sudan	4.41	0.66	0.09						
Sweden	45.32	16.28	5.74	19.44	0.87	0.79	0.05	0.08	0.03
Switzerland	38.07	7.13	10.69				1.66	4.28	0.06
Thailand	21.83	13.05	8.76	0.00	0.00		0.00	0.01	0.01
United Arab Emirates	5.44	2.34	3.01	0.04			0.04		
Ukraine	5.09		4.34	0.55	0.25	0.13			0.50
United Kingdom of Great Britain and Northern Ireland	13.29	5.57	2.08	3.74	0.98	0.09	0.23	0.51	0.09
United States of America	16.72	15.04	1.67						

Table 5. Administered activities (MBq) for major nuclear medicine procedures using a gamma camera or SPECT system, reported in this survey

Country	Nervous System	Nervous System	Skeletal	Cardiovascular	Cardiovascular	Pulmonary	Endocrine	Endocrine	Gastrointestinal	Genitourinary	Oncology	Oncology	Oncology	Infection Inflammation	Infection Inflammation	Lymphatics
	^{99m} Tc	¹²³ I	^{99m} Tc	^{99m} Tc	²⁰¹ Tl	^{99m} Tc	^{99m} Tc	¹²³ I	^{99m} Tc	^{99m} Tc	^{99m} Tc	¹¹¹ In	¹²³ I	^{99m} Tc	⁶⁷ Ga	^{99m} Tc
Argentina	1 140		1 088	925		185	370		189	185				1 147		
Australia	775		890	1 202	140	132	327		169	376			200	636	211	53
Belgium	709	191	765	742	110	207	165	14	45	173						
Brazil	964		1 008	838		149	222		373	190					182	
Bulgaria	642	170	603	680		119	293		105	188	366			450		
China			740	833			185									
Croatia	855	111	633	560		155	97			140				555		
Cyprus			666	574	74	230	400			194						
Czech Republic	747	183	786	832	102	207	189	20	141	205		220		723		
Denmark		170	668	616		158	164			95				423		
Estonia		228	683	417		101	216			99	747		266	744		
Finland	692	176	591	537	113	103	299	173	186	110	99		330			
France			680			240	150	9		190						
Germany	740	180	650	400	75	120	70		100	100		150		800		
Greece	665	195	660	670	105	180	150			200		145			170	
Iceland	740	180	680	740		125	326			222	248			740		
Japan	611	179	714	848	108	218				552						
Lebanon			740	1 500		92	74		74	148						
Lithuania	690	263	488	500		100	336	370	450	200			370			
Luxembourg			820	740			99									
Niger			700	1 110	110	296	185	110	185	185						
Norway	771	185	691	554		198	324	129	88	78	97	153		647		79
Philippines			1 037	1 087	95		345		403	198						
Poland	740		740	800		370	80		185	120						
Romania			660	850		222	167		689							67
Russian Federation	560	225	500	490		150	100	130	130	150	470					
Saudi Arabia			750	1 110		150		185	185	222					370	74
Spain	734	186	771	764		208	449			171		156		372	230	
Sweden	812	185	530	486		120	106	196		79	..	170	196	846		
Thailand	601		710	647	98	436	243		212	114	719					
United Arab Emirates	740		714	1076	112	320	323		204	158				537		
Ukraine	740		750	550		550	100			100						

Table 6. Administered activities (MBq) for major nuclear medicine procedures using a PET system, reported in this survey

Country	Oncology	Oncology	Cardio vascular	Cardio vascular	Skeletal	Nervous System	Infection - Inflammation
	¹⁸ F	⁶⁸ Ga	¹⁸ F	¹⁵ O	¹⁸ F	¹⁸ F	¹⁸ F
Argentina	344						
Australia	262	182				370	
Belgium	277						
Brazil	320		278		260		
Bulgaria	300		1036				
China	370		296			296	
Croatia	230		230				
Czech Republic	309				187		
Denmark	295				295	250	
Estonia	291				200	181	240
Finland	311		291		241	211	
France	300						
Germany	350				250	200	
Greece	345						
Japan	202	410	234				
Lithuania	340				329		
Luxembourg	296						
Norway	232		220			186	
Philippines	280						
Poland	400		300			300	490
Romania	291						
Russian Federation	280					360	
Spain	336						
Sweden	274	153		408	203	299	
Thailand	318	187		555		296	
United Arab Emirates	282	370	370		370		
Ukraine	350						350

Table 7. Dose Length Product (DLP: in mGy.cm) for major nuclear medicine procedures using a PET/CT system, reported in this survey

<i>Country</i>	<i>Oncology</i>	<i>Cardiovascular</i>	<i>Skeletal</i>	<i>Nervous System</i>	<i>Infection - Inflammation</i>
Australia	591			152	
Brazil	837	838	1056		
Bulgaria	365	558			
China	715	715		715	
Czech Republic	450				
Estonia	570			59	542
Finland	189	110	689	45	
Lithuania			411		
Russian Federation	800			700	
Thailand	479			259	

For Data Checking Only

Table 8. Dose Length Product (DLP: in mGy.cm) for major nuclear medicine procedures using a SPECT/CT system, reported in this survey

<i>Country</i>	<i>Nervous</i>	<i>Skeletal</i>	<i>Cardio vascular</i>	<i>Pulmonary</i>	<i>Endocrine</i>	<i>Gastro intestinal</i>	<i>Oncology</i>	<i>Infection - Inflammation</i>
Australia	94	210	66	115	204	213	190	229
Czech Republic	220	150	80					
Estonia		628					136	
Finland	84	30	15	11	81	12	18	
Iceland			50	73	389		130	100
Russian Federation		210	32	265	270			
Thailand	114	242	17	198	225	409	409	

Table 9. The percentage of nuclear medicine procedures using a SPECT/CT system which utilized the CT component, reported in this survey

<i>Country</i>	<i>Nervous</i>	<i>Skeletal</i>	<i>Cardio vascular</i>	<i>Pulmonary</i>	<i>Endocrine</i>	<i>Gastro intestinal</i>	<i>Oncology</i>	<i>Infection - Inflammation</i>
Australia	80	66	71	23	19	6	72	62
Czech Republic	50	30	70					
Estonia		95					100	
Finland	35	8	27	11	40	10	13	
Iceland		10	100	100	42		32	100
Russian Federation		20	5	1	10			
Thailand	50	6	55	13	8	1	53	

Table 10. The effective dose (mSv) from the administered radiopharmaceutical for major nuclear medicine procedures using a gamma camera or SPECT system, reported in this survey

Country	Nervous System	Nervous System	Skeletal	Cardio vascular	Cardio vascular	Pulmonary	Endocrine	Endocrine	Gastrointestinal	Genitourinary	Oncology	Oncology	Oncology	Oncology	Infection Inflammation	Infection Inflammation	Lymphatics
	^{99mTc}	^{123I}	^{99mTc}	^{99mTc}	^{201Tl}	^{99mTc}	^{99mTc}	^{123I}	^{99mTc}	^{99mTc}	^{99mTc}	^{111In}	^{123I}	^{67Ga}	^{99mTc}	^{67Ga}	^{99mTc}
Argentina	8.8		6.2	8.3		2.0	3.3		0.9	1.6				12.6			
Australia	7.2		5.1	10.8	19.6	1.5	4.3		2.9	1.8			2.6	7.0	21.1	0.06	
Belgium	6.6	9.6	4.4	6.7	15.4	2.3	2.1	3.1	0.8	1.2							
Brazil	7.4		5.7	7.5		1.6	2.9		3.5	1.7	3.3		22.2		18.2		
Bulgaria	6.0	8.5	3.4	6.1		1.3	3.8		1.4	1.3				5.0			
China			4.2	7.5			2.4										
Croatia	8.0	5.6	3.6	5.0		1.7	1.3			1.0				6.1			
Cyprus			3.8		10.4	2.5	5.2			1.4							
Czech Republic	6.9	9.1	4.5	7.5	14.3	2.3	2.5	4.4	2.4	1.4		11.9		8.0			
Denmark		8.5	3.8	4.3		1.7	2.1			0.7							
Estonia		11.4	3.9	3.8		1.1	2.8			0.7	0.4		3.5	8.2			
Finland	6.4	8.8	3.4	4.8	15.9	1.1	3.9	38.1	0.9	0.8	0.9		4.3				
France	6.9		3.9	9.0		2.6	2.0	2.0		1.3							
Germany	5.7	9.0	3.7	3.6	10.5	1.3	0.9		0.7	0.7		8.1		8.8			
Greece	6.2	9.8	3.8	4.7	14.7	2.0	2.0			1.4		7.8			17.0		
Iceland	6.9	9.0	3.9	6.7		1.4	4.2		3.8	1.7				8.1			
Japan	5.7	8.9	4.1	7.6	15.1	2.4			9.4								
Lebanon			4.2	13.5		1.0	1.0		1.3	1.0							
Lithuania	5.3	13.2	2.8	4.5		1.1	4.4	81.4	7.7	1.4			11.8				
Luxembourg			4.7	6.7			1.3										
Niger			4.0	10.0	15.4	3.3	2.4	24.2	3.1	1.3	5.9						
Norway	7.2	9.3	3.9	5.0		2.2	4.2	28.3	0.4	0.5	0.9	8.3		3.7		0.09	
Philippines			5.9	9.8	13.3		4.5		6.9	1.0							
Poland	6.9		4.2	7.2		4.1	1.0		1.7	0.6							
Romania			3.8	7.7		2.4	2.2		9.0								0.08
Russian Federation	4.3	11.3	2.9	4.4		1.7	1.3	28.6	1.2	0.7							
Saudi Arabia			4.3	10.0		1.7	4.8	40.7									0.09
Spain	6.8	9.3	4.4	6.9		2.3	5.8			1.2	8.4			4.1	23.0		
Sweden	7.6	9.3	3.0	4.4		1.3	1.4	2.5	0.2	0.6	9.2	2.5		9.3			
Thailand	4.6		4.0	4.5	13.7	4.8	3.2		3.6	0.8	6.5		17.1				
United Arab Emirates	6.9		4.1	9.7	15.6	3.5	4.2		3.5	1.1	9.0			5.9			
Ukraine	6.9		4.3	5.0		6.1	1.3			0.7							

France: Please check the administered activities and effective doses for the Gastrointestinal and Endocrine procedures

Table 11. The effective dose (mSv) from the administered radiopharmaceutical for major nuclear medicine procedures using a PET system, reported in this survey

Country	Oncology ¹⁸ F	Oncology ⁶⁸ Ga	Cardio vascular ¹⁸ F	Cardio vascular ¹⁵ O	Skeletal ¹⁸ F	Nervous System ¹⁸ F	Infection - Inflammation ¹⁸ F
Argentina	6.5						
Australia	5.0	4.7				7.0	
Belgium	5.3						
Brazil	6.1		5.3		4.9		
Bulgaria	5.7		19.7				
China	7.0		5.6			5.6	
Croatia	4.4		4.4				
Czech Republic	5.9				3.5		
Denmark	5.6				5.6		
Estonia	5.5				3.8	3.4	4.6
Finland	5.9	2.9	5.5	1.0	4.6	4.0	
France	5.7						
Germany	6.7				4.8	3.8	
Greece	6.6						
Japan	3.8	10.5	4.4				
Lithuania	6.5				6.3		
Luxembourg	5.6						
Norway	4.4		4.2			3.5	
Philippines	5.3						
Poland	7.6		5.7			5.7	9.3
Romania	5.5						
Russian Federation	5.3					3.0	
Spain	6.4						
Sweden	5.2	3.9		0.45	3.9	5.7	
Thailand	6.0	3.7				5.6	
United Arab Emirates	5.4	9.5	7.0	0.61	7.0		
Ukraine	6.7						6.7

Table 12 The effective dose (mSv) from the CT component for major nuclear medicine procedures using a SPECT/CT system, reported in this survey

<i>Country</i>	<i>Nervous</i>	<i>Skeletal</i>	<i>Cardio vascular</i>	<i>Pulmonary</i>	<i>Endocrine</i>	<i>Gastro intestinal</i>	<i>Oncology</i>	<i>Infection - Inflammation</i>
Argentina		2.0	2.0					
Australia	0.2	2.9	0.9	1.6	1.2	3.2	3.1	3.4
Czech Republic	0.5	2.1	1.1					
Estonia		8.8					2.0	
Finland	0.2	0.4	0.2	0.2	0.5	0.2	0.3	
Iceland			0.7	1.0	2.3		2.0	1.5
Russian Federation		2.9	0.4	3.7	1.6			
Thailand	0.2	3.4	2.3	2.8	1.3	6.1	6.1	

For Data Checking Only

Table 13. The effective dose in mSv from the CT component for major nuclear medicine procedures using a PET/CT system, reported in this survey

Country	Oncology	Oncology	Cardiovascular	Cardiovascular	Skeletal	Nervous System	Infection - Inflammation
	¹⁸ F	⁶⁸ Ga	¹⁸ F	¹⁵ O	¹⁸ F	¹⁸ F	¹⁸ F
Argentina	16.3						
Australia	8.9	9.0				2.3	
Brazil	12.6		11.7		15.8		
Bulgaria	5.5		7.8				
China	10.7		10.0			10.7	
Czech Republic	6.8						
Estonia	8.5					0.9	8.1
Finland	2.8	3.4	1.5	0.9	10.3	0.1	
Lithuania					6.2		
Russian Federation	12.0					1.5	
Thailand	7.2	7.2				0.5	

Table 14. The number of nuclear medicine staff by country, as an absolute number and as a frequency per million population as reported in this survey

Country	Year	NM physicians		Medical physicist in NM		Radiation technologist		Radiopharmacists /radiochemists		Nurses in NM	
		Number	Per 1mln population	Number	Per 1mln population	Number	Per 1mln population	Number	Per 1mln population	Number	Per 1mln population
Argentina	2015	374	9.3	13	0.3	208	5.2				
Australia	2009	247	10.4	20	0.8	1 015	42.8	25	11	50	2.1
Bangladesh	2014	126	0.8								
Belarus	2014	43	4.5			50	5.3			50	5.3
Belgium	2015	308	27.5	35	3.1			48	4.3		
Brazil	2015	792	3.9	196	1.0	518	2.5	393	1.9	2 350	11.5
Brunei Darussalam	2017	1	2.4	1	2.4	3	7.2	5	12	2	4.8
Bulgaria	2016	57	7.7	13	1.8	34	4.6	18	2.4	30	4.1
China	2013	3 904	3.2	87	0.1	2 777	2.3	174	0.1	1 736	1.4
Croatia	2015	74	18.0	9	2.2	41	10.0	41	10	65	15.8
Cyprus	2014	7	7.4	4	4.2	7	7.4				
Czech Republic	2016	199	18.8	34	3.2	75	7.1	57	5.4	314	29.7
Denmark	2016	110	19.3	25	4.4			27	4.7		
Estonia	2016	11	8.4	5	3.8	18	13.7	2	1.5	3	2.3
Finland	2015	104	19.0								
France	2012	648	9.9	74	1.1	1 470	22.4	126	1.9		
Germany	2014	1 000	12.3								
Greece	2013	296	27.0	277	25.3	114	10.4	86	7.8	133	12.1
Iceland	2017	3	8.7								
Indonesia	2017	45	0.2	13	0.1	13	0.1	4	0.02	26	0.1
Japan	2016	1 393	11.0								
Lebanon	2017	15	3.1	0	0.0	25	5.2	0	0	0	0
Lithuania	2017	22	7.6	7	2.4	20	6.9	0	0	15	5.2
Luxembourg	2015	12	21.1	1	1.8	30	52.7	0	0	2	3.5
Montenegro	2017	4	6.7	1	1.7	6	10.0				
Netherlands	2014	190	11.3								
Niger	2017	4	0.2	1	0.1	2	0.1	0	0	1	0.1
Philippines	2016	159	1.6	17	0.2	122	1.2	4	0.04		

Country	Year	NM physicians		Medical physicist in NM		Radiation technologist		Radiopharmacists /radiochemists		Nurses in NM	
		Number	Per 1mln population	Number	Per 1mln population	Number	Per 1mln population	Number	Per 1mln population	Number	Per 1mln population
Poland	2015	296	7.7	63	1.6						
Romania	2017	71	3.6	26	1.3						
Russian Federation	2015	400	2.7	40	0.3	650	4.4			150	1.0
Spain	2011	630	13.5	77	1.6						
Sudan	2017	12	0.3	20	0.6	25	0.7				
Sweden	2016	220	22.0	80	8.0						
Switzerland	2017	150	17.8	40	4.8	500	59.4	33	3.9		
Thailand	2018	66	1.0	25	0.4	93	1.4	29	0.4	60	0.9
North Macedonia	2017	27	13.0	6	2.9	17	8.2	8	3.9	4	1.9
Ukraine	2018	95	2.2	6	0.1					470	11.1
United Arab Emirates	2014 / 2016	21	2.3	13	1.4	39	4.2	4	0.4	17	1.8
United Kingdom of Great Britain and Northern Ireland	2016	160	2.4	300	4.6	1 150	17.5	30	0.5	75	1.1
United States of America	2016	37 039	114.7	9 217	28.5	16 307	50.5	11 344	351	14 889	46.1

Table 15. Equipment used in nuclear medicine as reported in this survey

Country	Year	Total SPECT		Among them SPECT/CT		Total PET		Among them PET/CT		Gamma Cameras (Planar)		Single channel spectrometer	
		Number	Per 1 M	Number	Per 1 M	Number	Per 1 M	Number	Per 1 M	Number	Per 1 M	Number	Per 1 M
Argentina	2015	287	7.2	8	0.20	28	0.7	10	0.25	40	1.00	274	6.83
Australia	2014	660	27.8	400	16.85	44	1.9	40	1.68	40	1.68	12	0.51
Bangladesh	2014	13	0.08			4	0.025			72	0.45	35	0.22
Belarus	2014	18	1.9	1	0.11					7	0.74		
Belgium	2015	205	18.3	129	11.5	26	2.3	24	2.14	130	11.6		
Brazil	2014-2016	784	3.8	10	0.05	270	1.3	130	0.64	138	0.68		
Brunei Darussalam	2017	1	2.4	1	2.40	1	2.4	1	2.40			2	4.79
Bulgaria	2016	15	2.0	5	0.68	7	1.0	7	0.95	2	0.27	1	0.14
China	2013	555	0.45	215	0.18	198	0.2			17	0.01		
Croatia	2015	7	1.7	7	1.70	5	1.2	5	1.21	12	2.91		
Cyprus	2014	10	10.5	1	1.05								
Czech Republic	2016	131	12.4	46	4.35	35	3.3	15	1.42	30	2.84	45	4.25
Denmark	2016	55	9.6	41	7.19	42	7.4	39	6.84	42	7.37		
Estonia	01	3	2.3	3	2.28	3	2.3	3	2.28	0	0.00	4	3.04
Finland	2015	35	6.4	35	6.38	29	5.3	13	2.37	0	0.00	0	
France	2012	619	9.4	151	2.30	207	3.2	101	1.54				
Germany	2014					150	1.8						
Greece	2013	147	13.4	7	0.64	5	0.5	5	0.46	5	0.46		
Iceland	2017	4	11.6	1	2.91								
Indonesia	2019	16	0.07			4	0.017						
Japan	2016	1 404	11.0			772	6.1	346	2.72	1 506	11.85		
Lebanon	2017	17	3.5	2	0.42	28	5.8	14	2.92	1	0.21	0	
Lithuania	2017	1	0.35	1	0.35	2	0.69	2	0.69	8	2.77		
Luxembourg	2015	7	12.3	1	1.76	2	3.5	1	1.76	2	3.51		
Montenegro	2017	1	1.7	1	1.67					1	1.67		
Netherlands	2014					58	3.4			160	9.51		
Niger	2017	2	0.12	0	0.00			0		0	0.00	1	0.06
Philippines	2016	4	0.04	4	0.04	6	0.06	6	0.06	55	0.54		
Poland	2015	76	2.0	42	1.09	26	0.7	26	0.68	18	0.47		
Romania	2017	14	0.71	7	0.36	12	0.6	12	0.61	32	1.63	2	0.10

Country	Year	Total SPECT		Among them SPECT/CT		Total PET		Among them PET/CT		Gamma Cameras (Planar)		Single channel spectrometer	
		Number	Per 1 M	Number	Per 1 M	Number	Per 1 M	Number	Per 1 M	Number	Per 1 M	Number	Per 1 M
Russian Federation	2015	168	1.1	80	0.55	19	0.13	19	0.13	60	0.41	94	0.64
Spain	2011	78	1.7	78	1.67	92	2.0	75	1.60				
Sudan	2017	5	0.14	0	0.00			0	0.00	2	0.06		
Sweden	2016	61	6.1	50	5.00	20	2.0	17	1.70	5	0.50	25	2.50
Switzerland	2017	52	6.2	52	6.18	41	4.9	39	4.63	15	1.78	10	1.19
Thailand	2018	26	0.4	19	0.29	14	0.21	14	0.21			23	0.35
Turkey	2016	359	4.5	39	0.5	136	1.7	133	1.7				
North Macedonia	2017	6	2.9	2	0.96	6	2.9	3	1.45	2	0.96	0	0.00
Ukraine	2018	19	0.45	4	0.09	3	0.071	3	0.07	21	0.50	29	0.69
United Arab Emirates	2014 / 2016	21	2.3	6	0.65	4	0.43	4	0.43	1	0.11	0	
United Kingdom of Great Britain and Northern Ireland	2016	460	7.0	240	3.66	77	1.2	70	1.07	40	0.61		
United States of America	2016	12 931	40.0	1 967	6.09	1 680	5.2	1 596	4.94	1 124	3.48		